MEMORANDUM

TO: Vermont Mental Health Performance Indicator Project Advisory Group and Interested Parties

FROM: John Pandiani

DATE: February 26, 1999

RE: After Children's Services

This week's Performance Indicator report presents the results of a three year follow-up on young people who had received services from three child-serving agencies when they were 17 years of age. The significant life events include hospitalization for behavioral health care, incarceration (for boys), and giving birth (for girls). The document that is attached is a copy of the handout from a presentation by Vermont's Performance Indicator Project at the annual Tampa Children's Research Conference last week.

The results indicate that girls who had received services were not significantly more likely than other girls to give birth during the follow-up period were. Boys who had received services were significantly more likely to be incarcerated than other boys in the same age group. Finally, rates of hospitalization for behavioral health care were significantly higher among young people who had been served than for others in the same age group.

As always, we will be interested in your comments regarding these findings and their presentation. Please call with your comments to 802-241-2638 or e-mail them to jpandiani@ddmhs.state.vt.us.

After Children's Services

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ABSTRACT

Four functional outcomes are measured for young people who had been served by community mental health, child protection, and special education programs when they were 17 years of age. Results indicate that boys in the system of care were much more likely than other boys to be incarcerated during the next three years, but their elevated risk of incarceration compared to other boys actually decreased over time. Girls who had been served were slightly more likely to bear children when they were 18 to 20 years of age. Finally, young people who had been in the system of care were very much more likely to be hospitalized for behavioral health than other young people.

There were also substantial differences between community mental health, child protection, and special education programs with regard to these outcomes.

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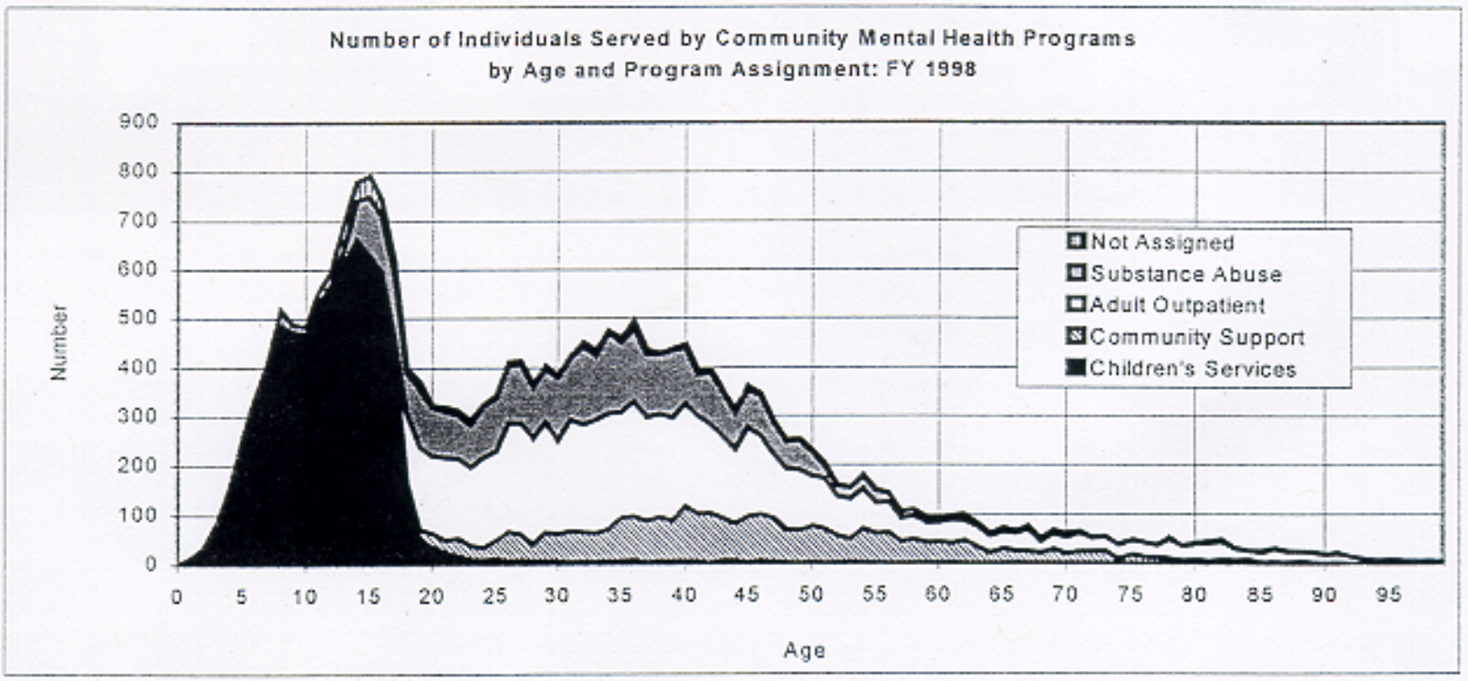
The transition of consumers of children's services into the adult world has been recognized as a critical area of concern for some time (Nisbet, Covert, and Schun, 1992). It has also been recognized as an area of weakness in most systems of care for children and adolescents with severe emotional disturbances.

In Vermont, we speak of a concern that young people are "falling through the crack". The graphic representation of the age distribution of all people served by community mental health programs in the state of Vermont during 1998 provides a clear picture of "the crack". Young people in the 18 to 25 year age group are much less likely to receive services than people in the younger "teen-aged" group or the older "young adult" age group.



This study was designed to determine the outcomes of children's services in three service sectors during the critical transition years. Specifically, we will examine treatment outcomes for young people who received services from community mental health programs, the state child protection and juvenile justice agency, and/or special education programs for young people with emotional behavioral disorders. The study will focus on young people served by these programs when they were seventeen years of age, and measure outcomes over the next three years.

The treatment outcomes that will be examined include incarceration (for boys), maternity and public assistance (for girls), and hospitalization for behavioral health care (for both boys and girls). These outcome measures for the three sectors will be compared to each other and to young people in the general population of the state of Vermont.

Unlike most outcome measures in children's mental health which tend to be short term and clinical in focus (Rosenblatt, 1998), this research is longer term in focus (three years) and oriented toward community functioning and welfare.

METHOD

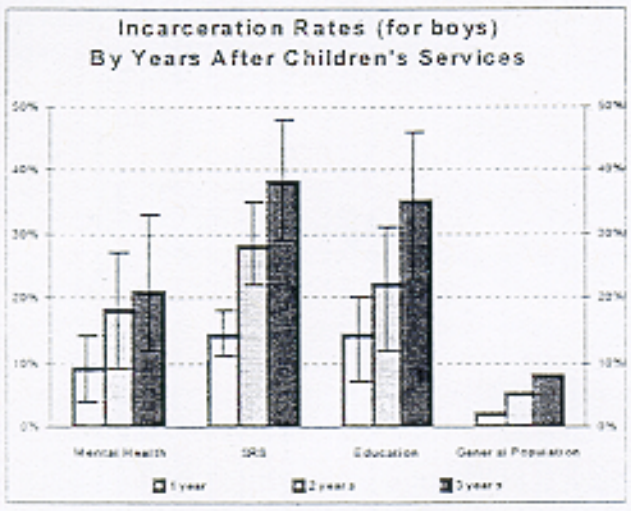
The findings reported here are based entirely on the analysis of data from existing operational and administrative data bases using the method of Probabilistic Population Estimation. Probabilistic Population Estimation allows researchers to determine the number of people represented in data bases that do not include personal identifiers, and to determine the number of people shared across data sets that do not include personal identifiers. In this way, it is possible to accurately determine, for instance, how many of the young people who had been served by the community mental health programs when they were 17 years of age (mental health data set) were incarcerated during the following three years (corrections department data set).

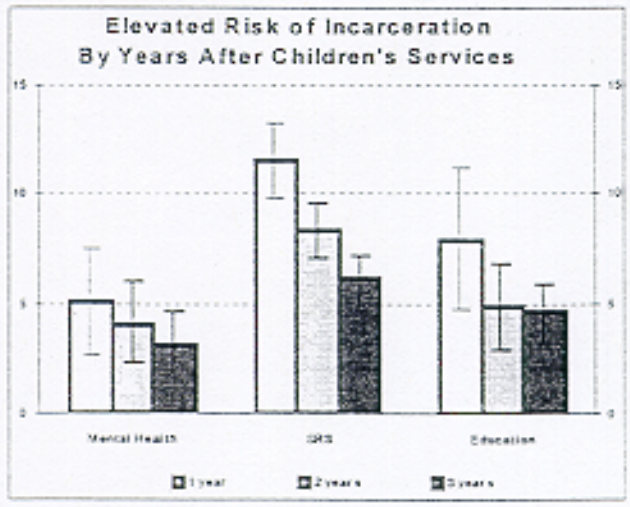
Seven data sets were used in this analysis. Anonymous data sets obtained from the state mental health authority, child protection and juvenile justice agency, and state education department provided basic demographic information on all children and adolescents served during each of three years (1993 – 1995). Anonymous data sets obtained from the state correctional department, health department, and social welfare agency provided information on our four outcome measures.

Probabilistic Population Estimation is a statistical method for determining the number of people represented in a data set that does not contain a unique person identifier. The estimate is based on a comparison of information on the distribution of dates of birth in the general population with the distribution of dates of birth observed in data sets (Banks and Pandiani, 1998; Banks et. al. 1998; Pandiani, Banks, and Gauvin, 1997; Pandiani, Banks, and Schacht, 1998a, 1998b). (More detail on Probabilistic Population Estimation is provided in the Methodological Appendix to this document.) Because this measure relies on information in existing data bases, it does not require the commitment of substantial amounts of staff time, and it is possible to evaluate changes in systems of care that have occurred in the past.

Incarceration Rates (for boys)

Approximately 27% of the boys who had received services from one of the three agencies under examination when they were 17 years of age were incarcerated in the state of Vermont at least once over the next three years. During this same time period, 6% of boys who were in the same age group but had not received children's services were incarcerated. Boys who had been served in this system of care were 4.9 times as likely to be incarcerated as other boys.

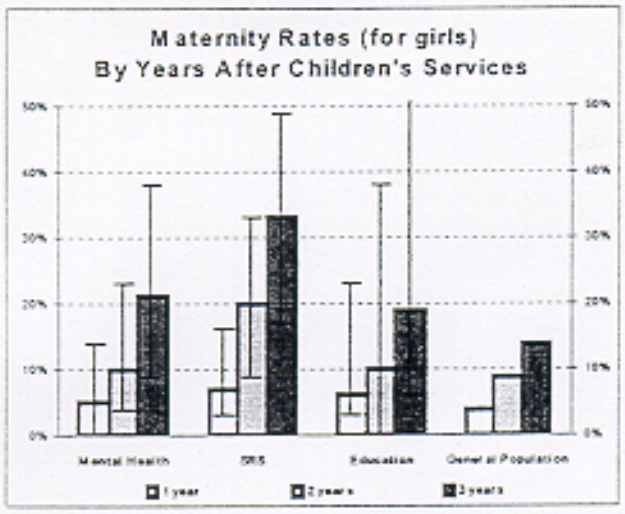


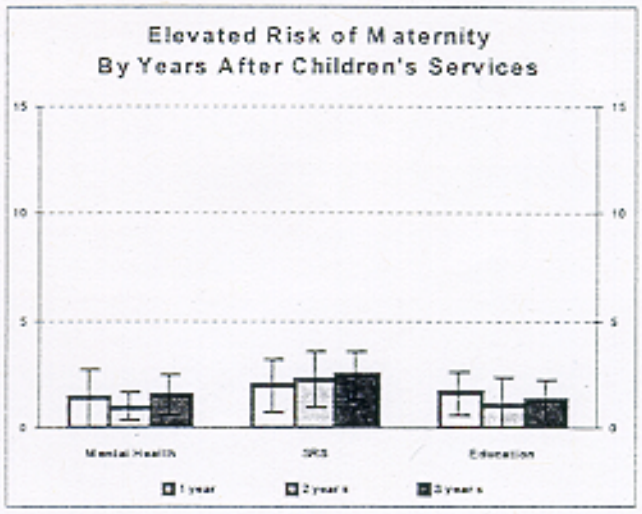


Boys who had been served by the state child protection and juvenile justice agency had the highest incarceration rate (38%). Boys served by the special education programs had a similar incarceration rate (34%). Boys who had been served by the community mental health programs had the lowest incarceration rate (21%).

Maternity Rates and ANFC Participation (for girls)

Approximately 23% of the girls who had received services from one of the three agencies under examination when they were 17 years of age had given birth during the next three years, and 14% were receiving Aid to Needy Families with Children during a six month sample period. During this same time period, 14% of girls who were in the same age group but had not received children's services had given birth and 8% were recipients of ANFC payments. Girls who had been served in this system of care were 1.7 times as likely to have babies and 1.8 times as likely to receive ANFC payments as other girls in the same age group.



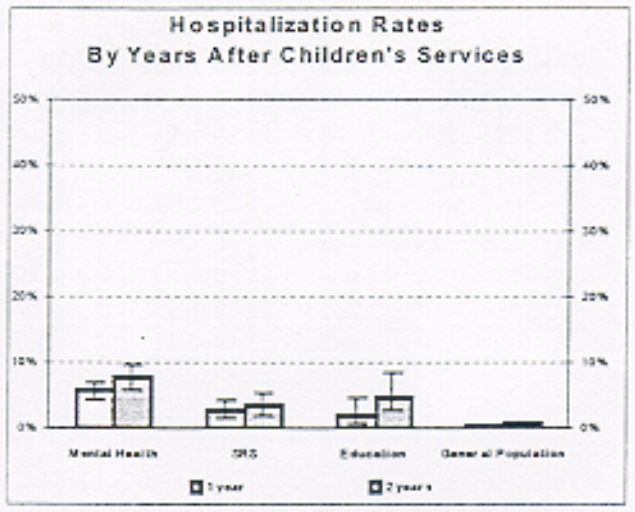


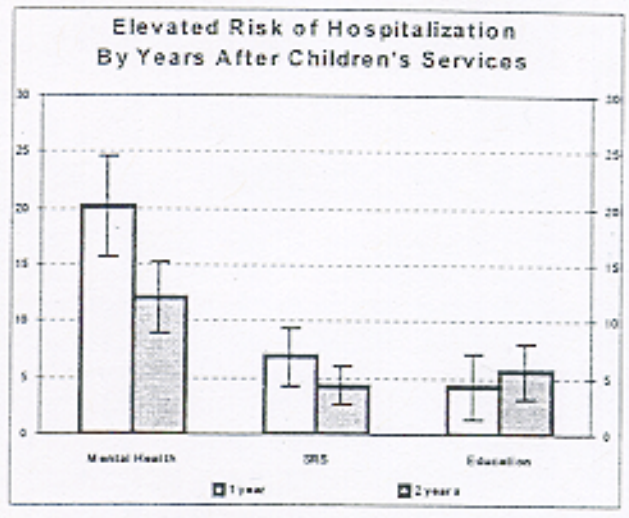
Girls who had been served by the state child protection and juvenile justice agency had the highest maternity rates (33%), followed by girls who had been served by the community mental health programs (21%) and girls who had been served by the special education programs (21%)

Hospitalization for Behavioral Health Care

Approximately 5% of the young people who had received services from one of the three agencies under examination when they were 17 years of age had been hospitalized for behavioral health care over the next two years. During this same time period, less than 1% of young people who were in the same age group but had not received children's services were hospitalized for behavioral health care. Young people who had been served in this system of care were 8.3 times as likely to be hospitalized as other young people in the same age group.

Young people who had been served by the community mental health programs had the highest hospitalization rate (8%), followed by young people who had received special education services (5%) and clients of the child protection and juvenile justice agency (3%).





DISCUSSION

Compared to other young people, boys and girls who received services in Vermont's system of care for children and adolescents when they were 17 years of age were much more likely to be hospitalized for behavioral health care over the next three years. The young people who had been served were more than 8 times as likely to be hospitalized. During this same time period, boys who had received services were incarcerated at almost five times the rate of other boys. By comparison, the difference in the maternity rate of girls who had been served and other girls was relatively small.

In the past, the evaluation of children's services programs has tended to focus on program values and practices, rather than outcomes, to identify promising models of service delivery (Clark, Unger, and Stewart, 1993). The methodology that was used in this study provides the opportunity for researchers to complement this focus with an outcomes based evaluation strategy that can provide valid and reliable measures of program performance. Because this approach uses existing data resources, it is much more economical than original data collection and it can be used to evaluate program models that have been in existence for some time. Programs can be compared, historical trends can be identified, and system of care outcomes can be compared to outcomes for the general population of the local region served by the programs.

Perhaps most important, this methodology provides for the measurement of long term functional outcomes that can include indicators of positive outcomes such as education and employment in addition to the less favorable outcomes that were examined here.

METHODOLOGICAL APPENDIX

PROBABILISTIC POPULATION ESTIMATION

Probabilistic Population Estimation is a statistical procedure that determines the number of people (with known confidence intervals) who are represented in data sets that do not contain unique person identifiers. Probabilistic Population Estimation uses information on the distribution of birth dates in a data set to determine the number of people represented in the data set. The number of people necessary to produce the number of birthdays observed in a single birth year cohort, for instance, would be calculated using the following formula:

$$P_j(l_j) = \sum_{i=1}^{l} \frac{365}{365-i}$$

where "P_j" is the number of people and "l" is the number of birth dates observed. Similar logic is used to determine the number of people who appear in more than one data set. The table below provides illustrative results of Probabilistic Population Estimation for populations of specified size.

Population Estimates for Specified Numbers of Birth Dates Within a Year

Birth Dates	Number of People	Birth Dates	Number of People
1	1.003 ± .103	180	249 ±20
10	10.15 ± .776	250	423 ±38
20	20.6 ±1.54	300	632 ±64
50	54. ±4	330	860 ±101
100	117. ±9	360	1630 ±325

POPULATION OVERLAP

In order to probabilistically determine the number of people shared across data sets that do not include a common person identifier, the sizes of three populations are determined and the results are compared. The number of people in each of the original data sets are the first two populations. The number of people in a data set that is formed by combining the two original data sets is the third data set.

The number of people who are shared by the two data sets is the difference between the sum of the numbers of people represented in the two original data sets and the number of people represented in the combined data set. This occurs because the sum of the number of people represented in the two original data sets includes a double count of every person who is represented in both data sets. The number of people represented in the combined data set does not include this duplication. The difference between these two numbers is the size of the duplication between the two original data sets, the size of the caseload overlap. In terms of mathematical set theory, the intersection of two sets is the difference between the sum of the sizes of the two sets (A+B) and the union of the two sets ($A \cup B$):

$$(A \cap B) = (A + B) - (A \cup B).$$

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